United States Department of Agriculture

Water and Climate Update

November 19, 2015

The Natural Resources Conservation Service produces this weekly report using data and products from the National Water and Climate Center and other agencies. The report focuses on seasonal snowpack, precipitation, temperature, and drought conditions in the U.S.

Weekly Highlight: Winter Weather Events – Snow and Rain

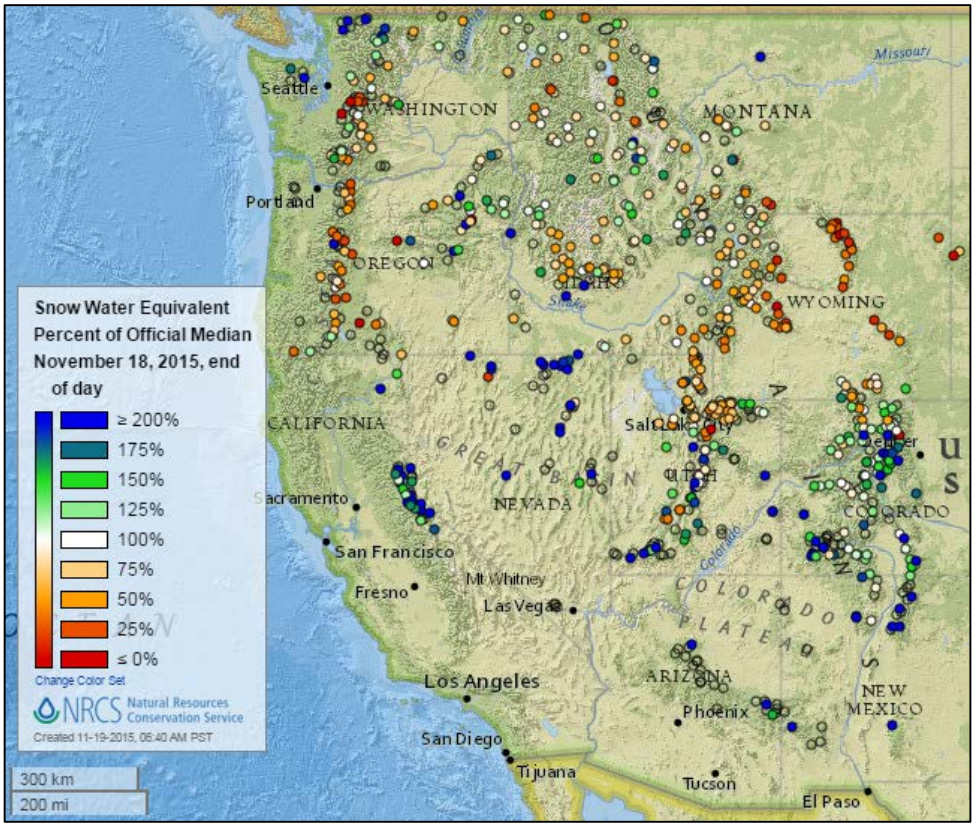
Significant winter storm events characterized this past week -- a major snowstorm in Colorado and heavy precipitation in western Washington and in the nation's midsection. These events are depicted in the maps in this week's report.

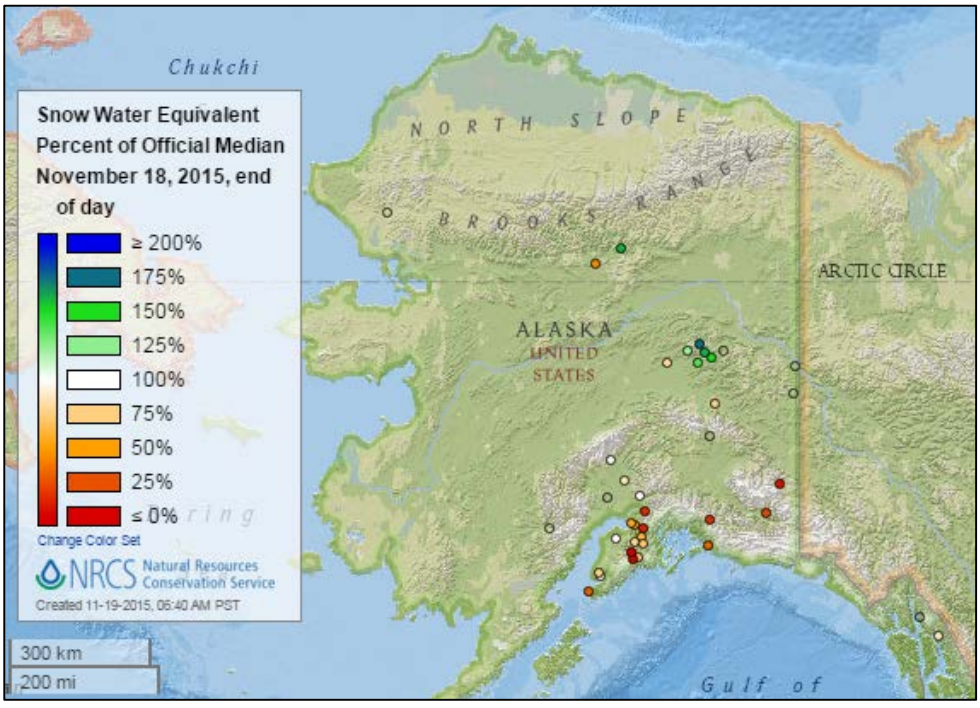
Photo shows blizzard conditions in Mountain Village, Colorado on November 17, 2015. Courtesy www.weather.com.

Snow

Current Snow Water Equivalent, Western Mountain Sites (NRCS SNOTEL Network)

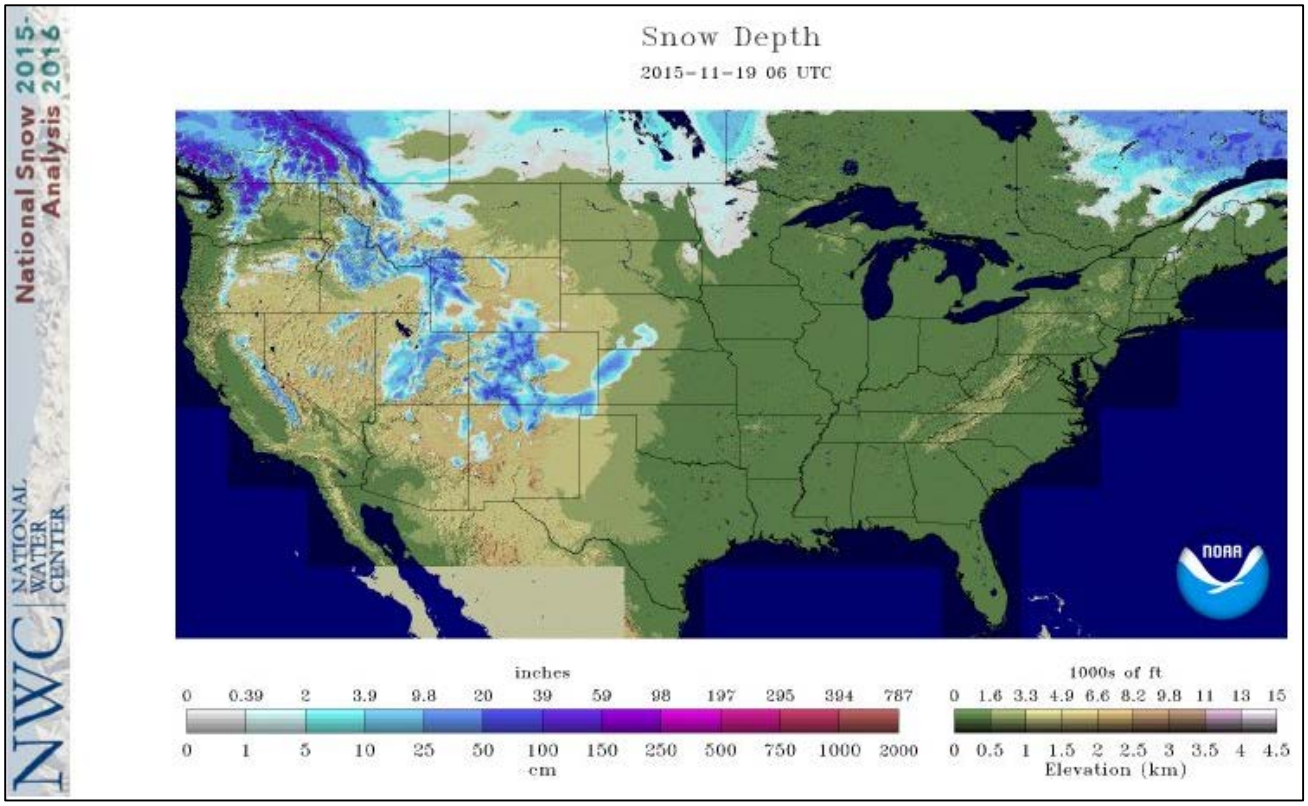
The current **snow water equivalent percent of median** map shows many areas with significantly above normal snowpack. This includes northwest Washington and the southern tier of states. Even so, the amounts are generally only a few inches (the exception being northwestern Washington with greater than 10 inches), as this is still early in the snow accumulation season. Below normal snowpack exists along a swath through southern Oregon, southern Idaho, northern Utah, and Wyoming.





The current **snow water equivalent percent of median** map for Alaska shows above normal snowpack in the Interior and below normal in the south.

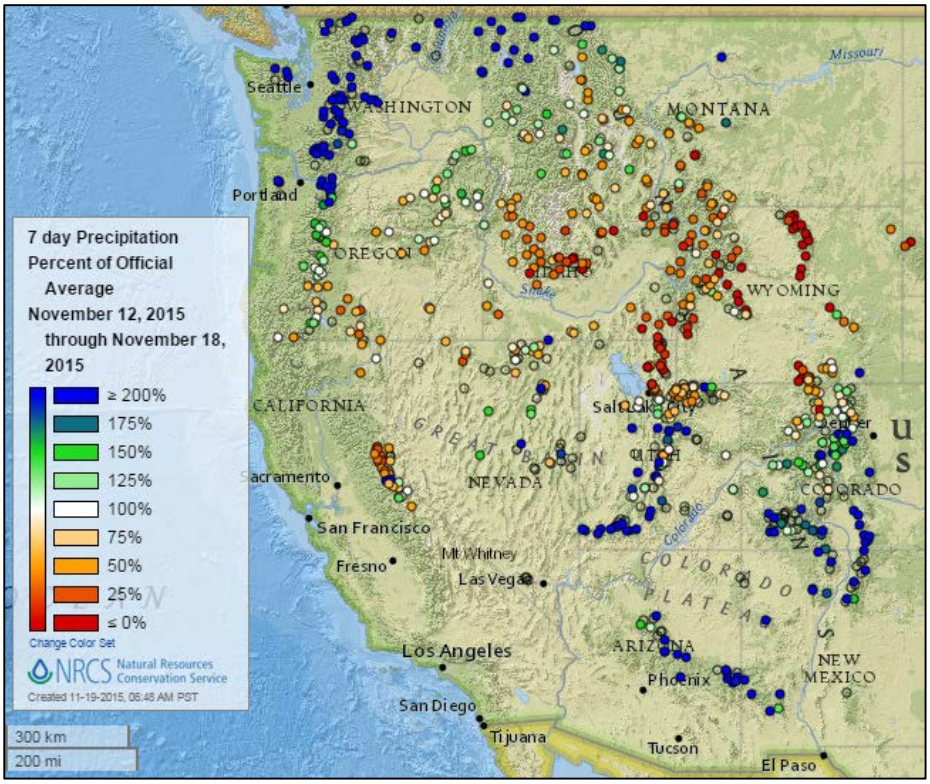
Current Snow Depth, National Weather Service (NWS) Networks



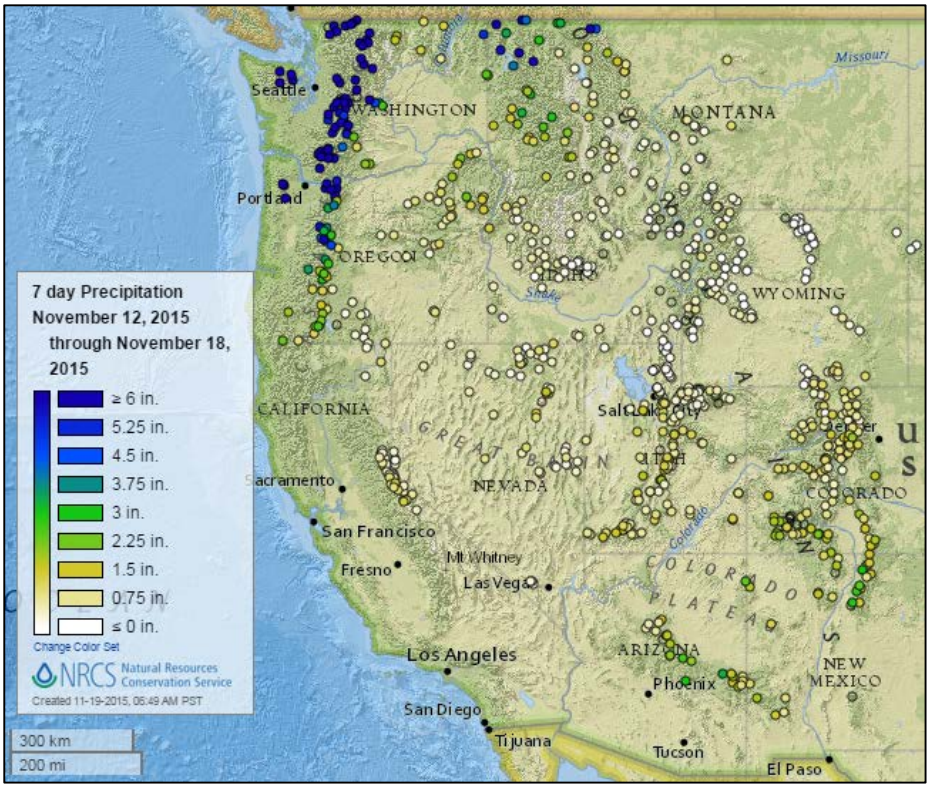
The National Water Center's current **snow depth** map for the continental U.S. shows several areas of significant snow accumulation including the Cascades of Washington and the northern Rockies. Also prominent is the snow cover in Colorado, due to the storm of the past week.

Precipitation

Last 7 Days, Western Mountain Sites (NRCS SNOTEL Network)

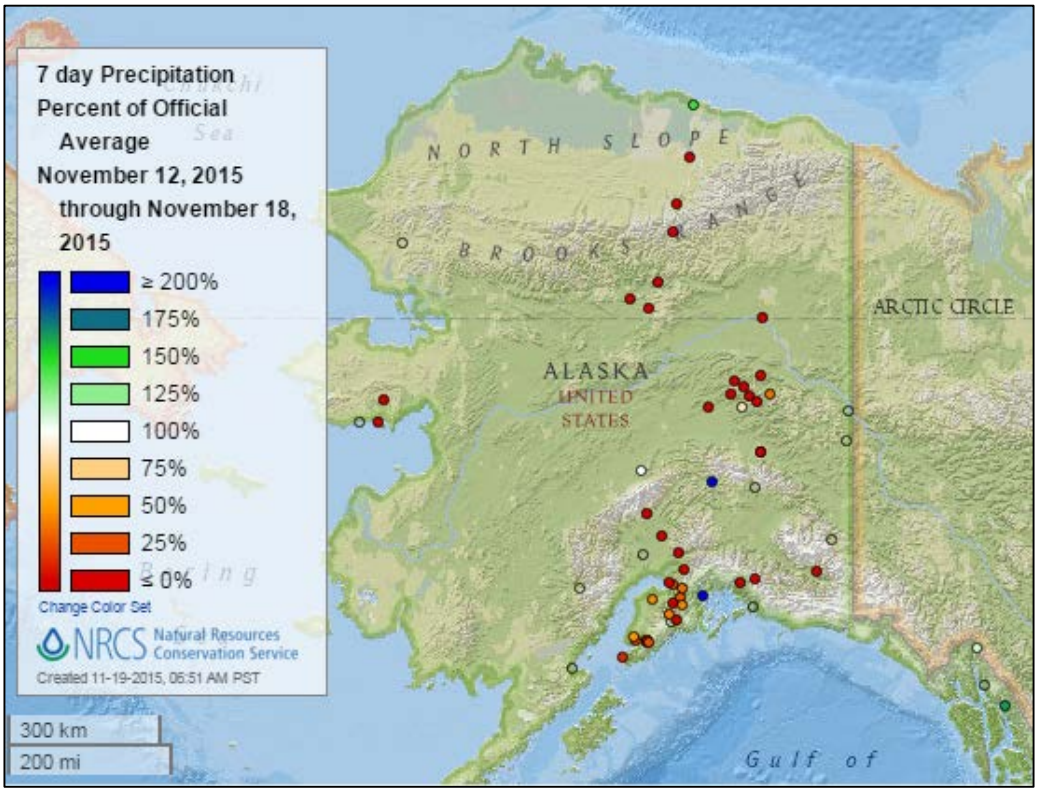


The 7-day **precipitation percent of average** map shows a northwest to southeast dipole of well above average areas. The Cascades of western Washington and northwestern Oregon plus the Idaho Panhandle form the northwest part of this dipole, with Utah, Colorado, Arizona, and New Mexico being the southeast part. In between, precipitation was below average.

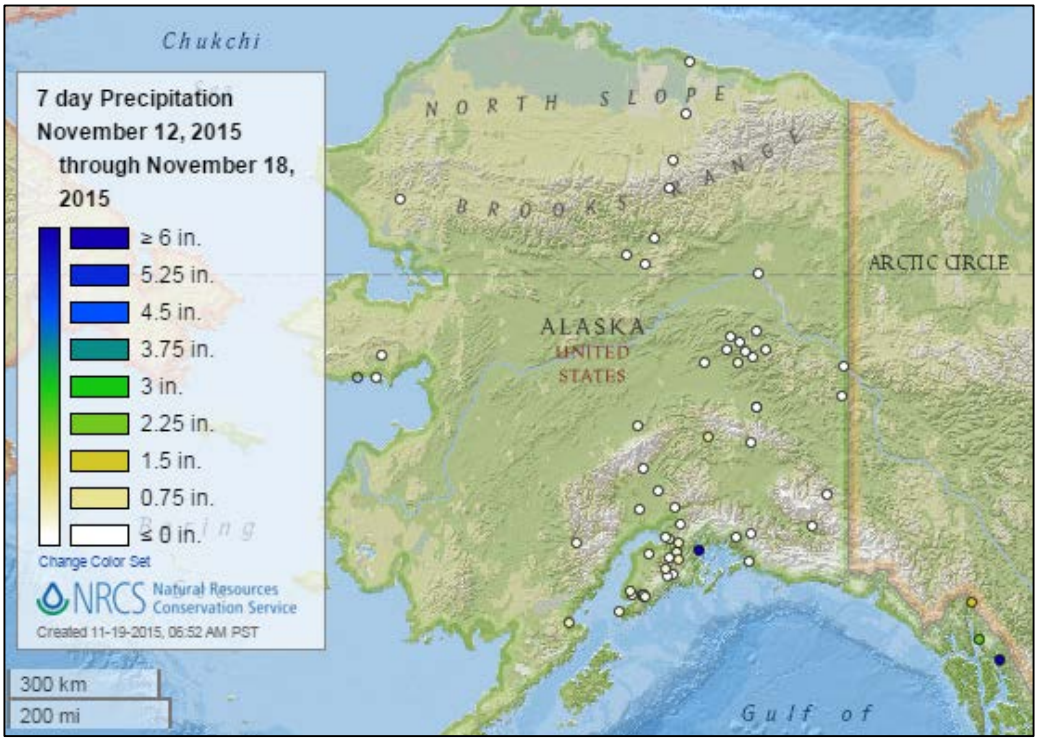


The **total precipitation** map shows the Northwest very prominently, with 5 to 15 inches for the past week. In the southern parts of the West, precipitation amounts were in the range of 1 to 5 inches, although this was still significantly above average, as shown in the map above.

The Alaska **precipitation percent of average** map for the last seven days shows primarily below average precipitation, except for the Panhandle, which was somewhat above average.



The Alaska **total precipitation** map shows very little to no precipitation for the week throughout the state except in the Panhandle, which received a few inches.

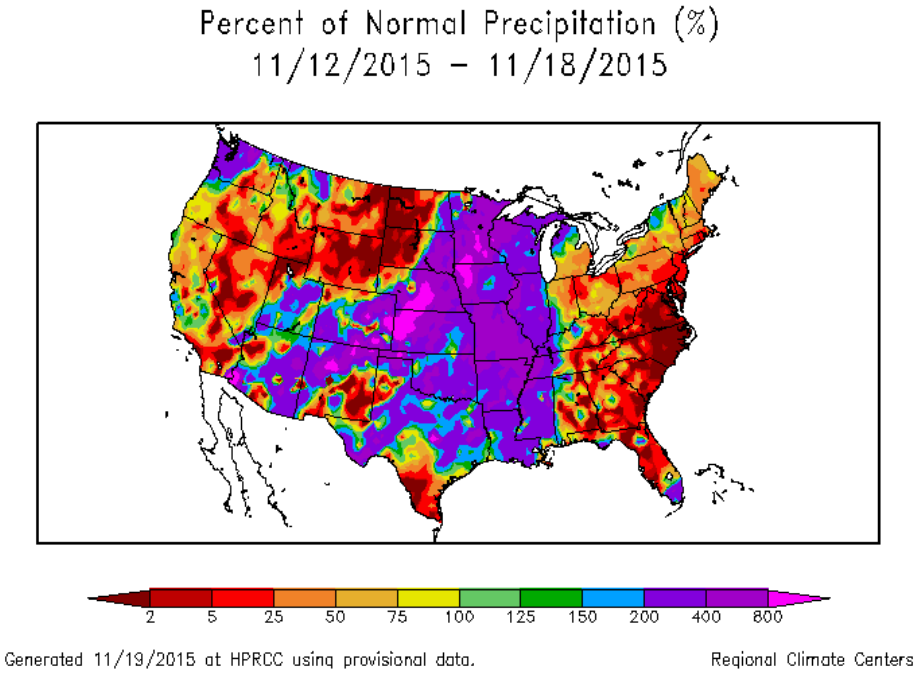


Last 7 Days, National Weather Service (NWS) Networks

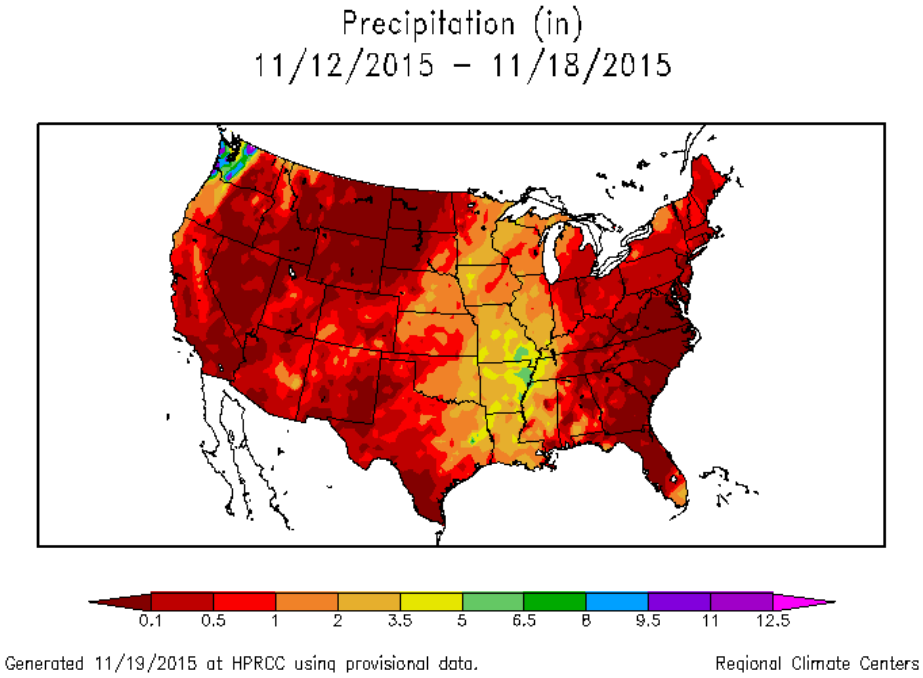
Source: Regional Climate Centers

The **percent of normal precipitation** map shows well above normal precipitation in western Washington, the Southwest, and throughout the entire midsection of the country.

Noticably dry areas include the northern Great Plains and most of the eastern seaboard.

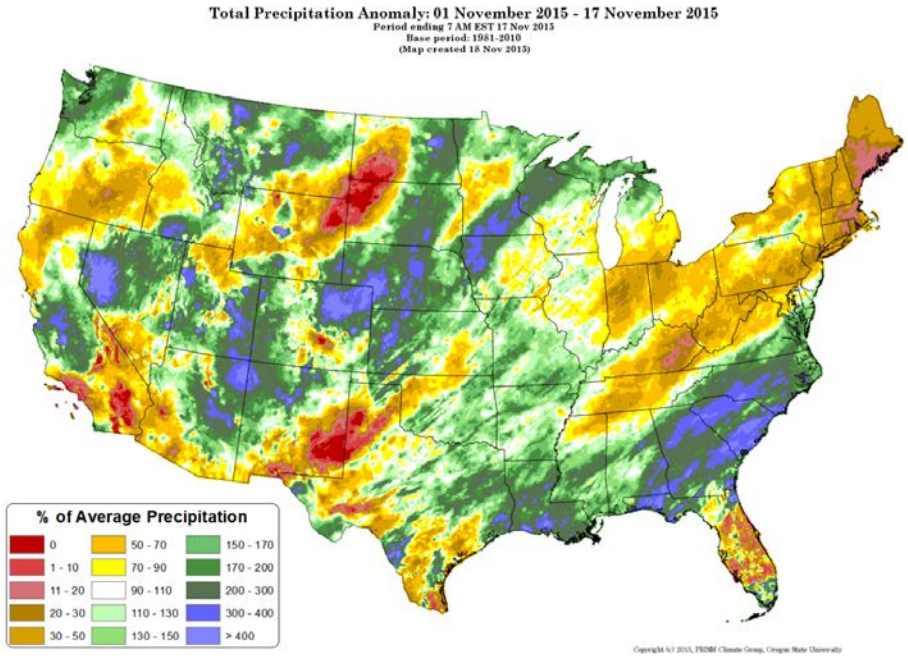


The **7-day total precipitation** map prominently shows well over 5 inches in western Washington and an area centered on Missouri and Arkansas. Elsewhere, amounts were small, generally less than an inch.

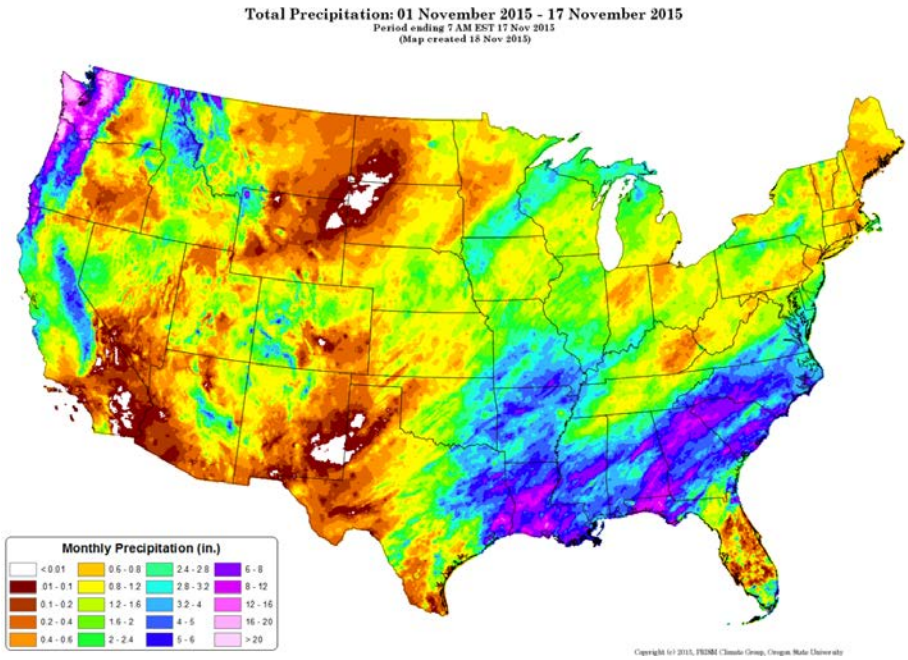


Month-to-Date, All Available Data Including SNOTEL and NWS Networks

Source: PRISM



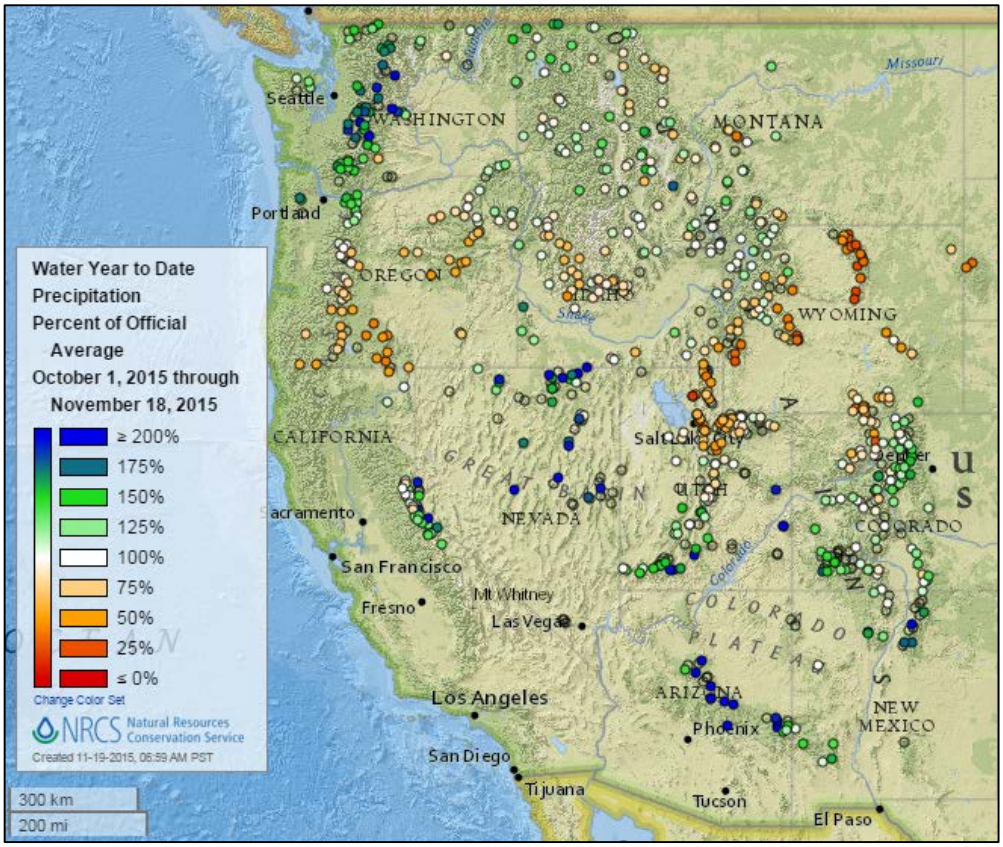
For the month of November to date, the national **precipitation percent of average** map shows patches of well above average precipitation scattered throughout the country, including the Pacific Northwest, portions of the Southwest, the central Great Plains, and the Southeast. Drier than average areas included a few scattered areas in the West as well as much of the upper Midwest and the Northeast.

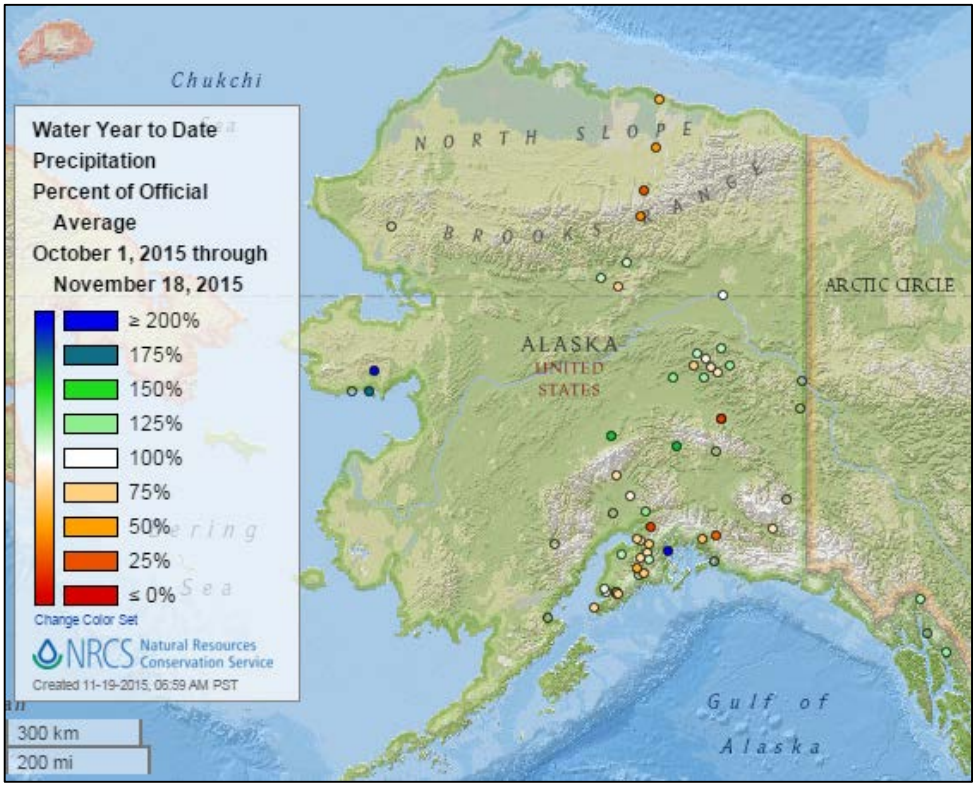


The November month-to-date **total precipitation map** highlights especially western Washington and the Southeast, with amounts exceeding 10 inches. Noticeably dry areas include the northern Great Plains, portions of the Southwest, and New England.

Water Year-to-Date, Western Mountain Sites (NRCS SNOTEL Network)

For the **2016 Water Year** that began on October 1, 2015, the northern and southern areas are prominently above average. In between is a swath of below average areas, going through southern Oregon, southern Idaho, northern Utah, and much of Wyoming.





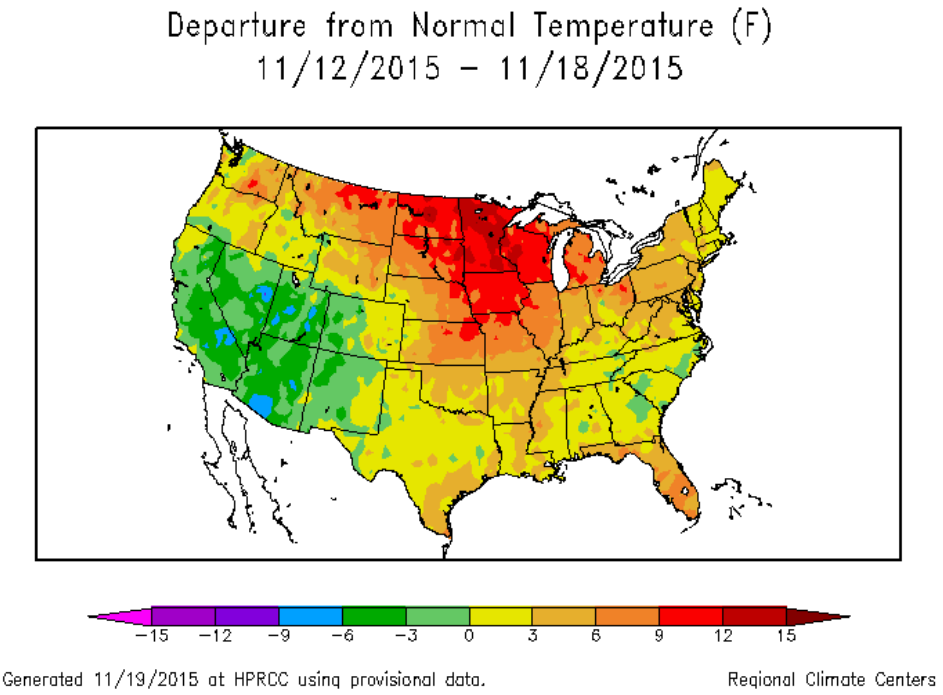
The Alaska water year-to-date **precipitation percent of average** map shows a mix of above, near, and below average sites throughout the state.

Temperature

Last 7 Days, National Weather Service (NWS) Networks

Source: Regional Climate Centers

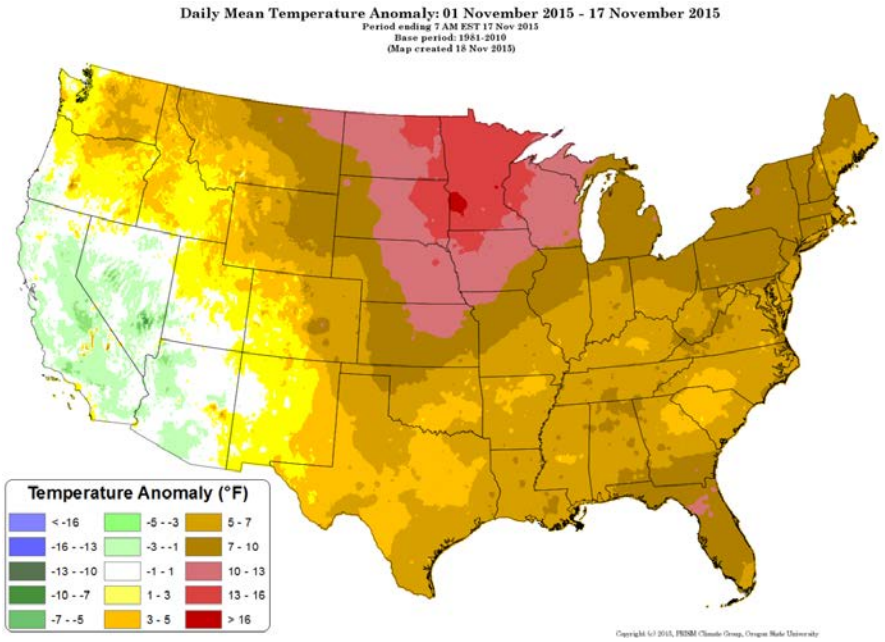
The map of the **average temperature anomalies** for the past week shows most of the Southwest being several degrees cooler than normal. In contrast, areas in the upper Midwest and northern Great Plains were several degrees warmer than normal. Elsewhere, temperatures were mostly near normal.



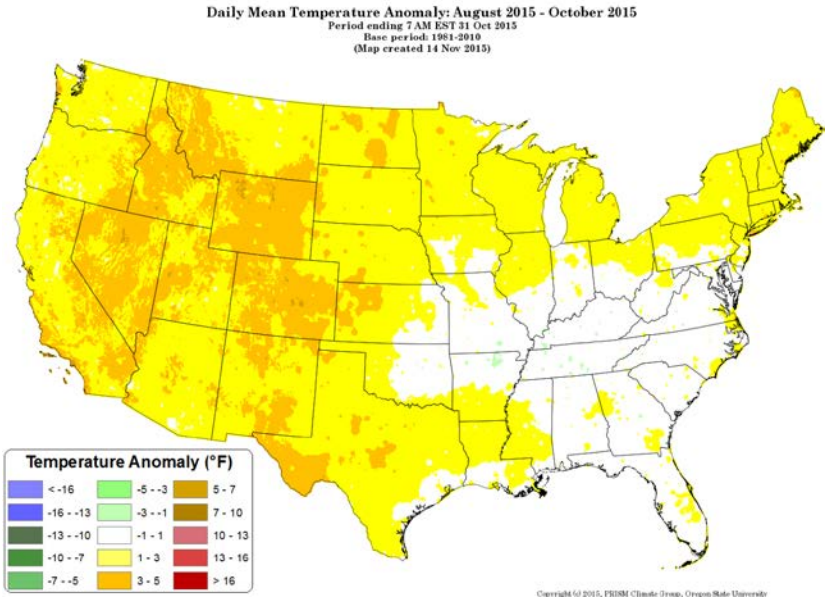
Month-to-Date, All Available Data Including SNOTEL and NWS Networks

Source: PRISM

For November 2015, the national **daily mean temperature anomaly** map most prominently shows well above normal temperatures in the upper Midwest and northern Great Plains, especially in Minnesota. Most of the remainder of the country was also above normal, to a lesser extent. The exception to this is in California, Nevada, and Arizona, which have been slightly cooler than normal.



Last 3 Months, All Available Data Including SNOTEL and NWS Networks Source: PRISM

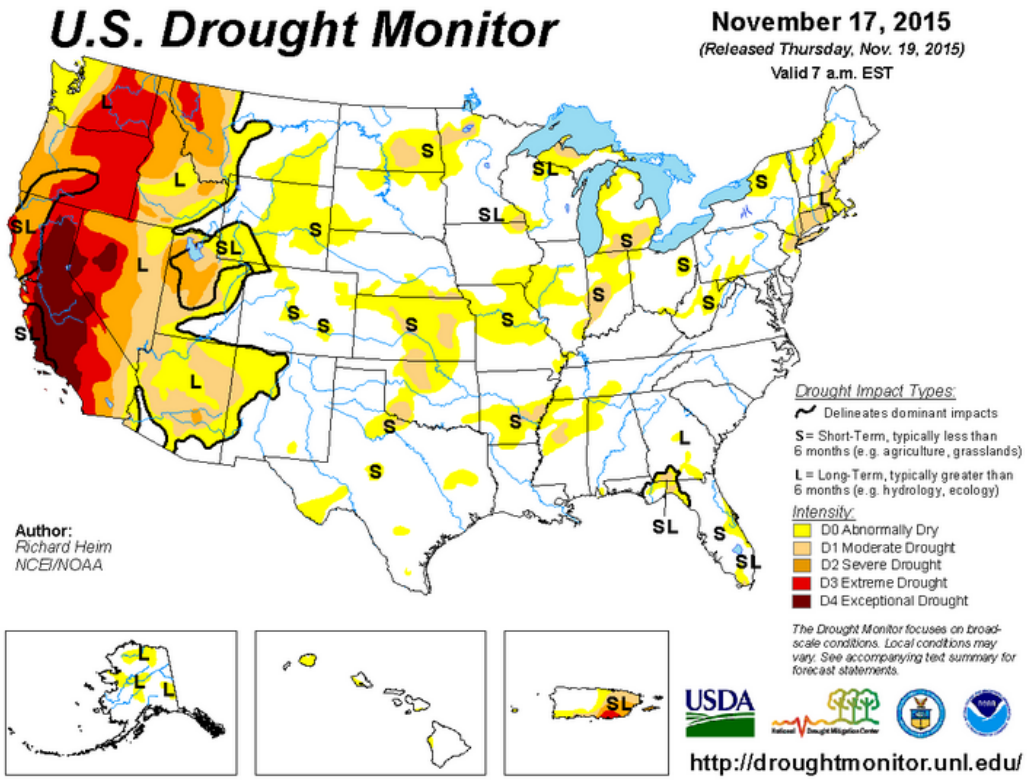


The August through October national **daily mean temperature anomaly** map shows about three-quarters of the country being above average. The exception is the southeastern quadrant, which was near normal.

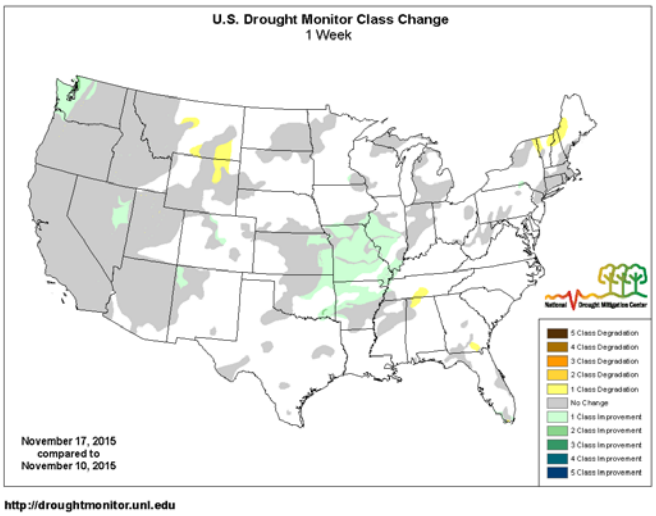
Drought

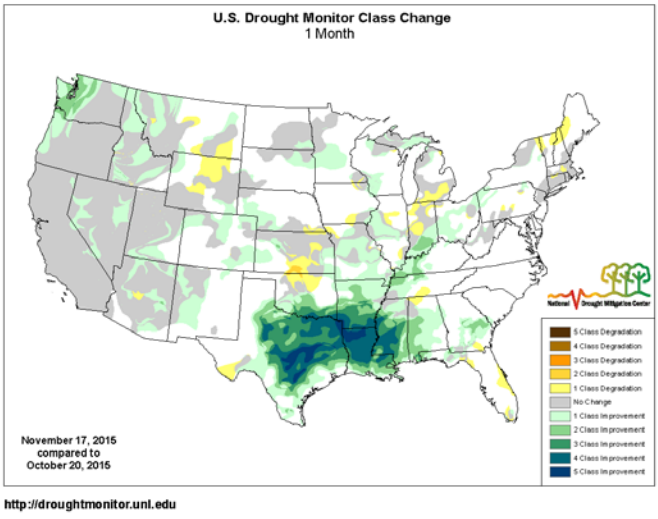
U.S. Drought Portal Comprehensive drought resource

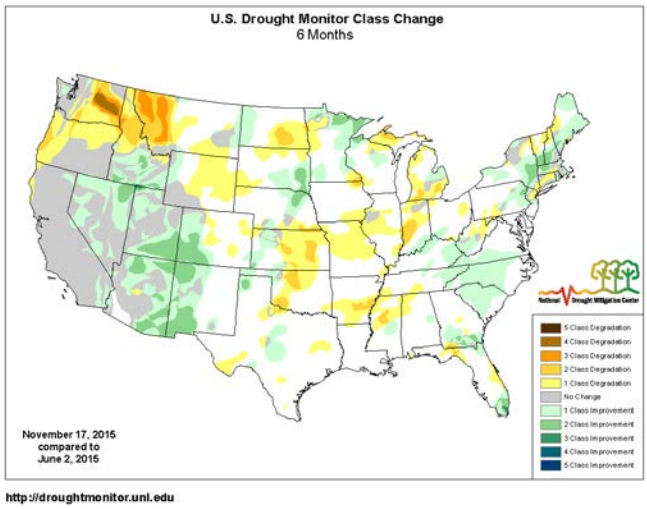
U.S. Drought Monitor See map below. Drought conditions continue in the West Coast states, including the interior parts of Washington and Oregon as well as much of California and Nevada.

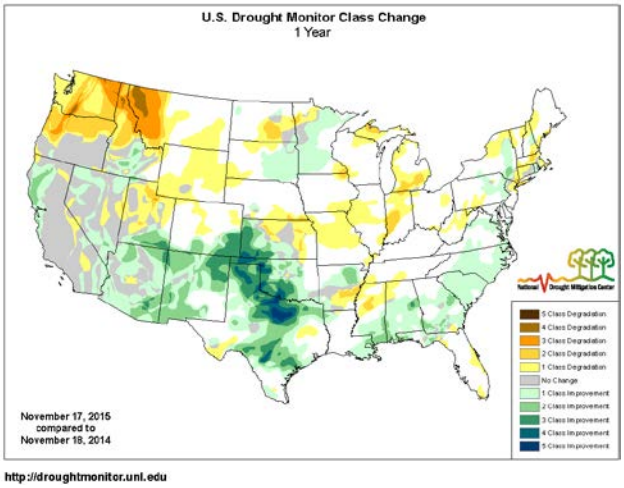


Changes in Drought Monitor Categories over Time









Drought conditions have improved in much of the country, especially in the south-central U.S. and in western Washington. The West has shown some recent improvement, but long-term drought persists.

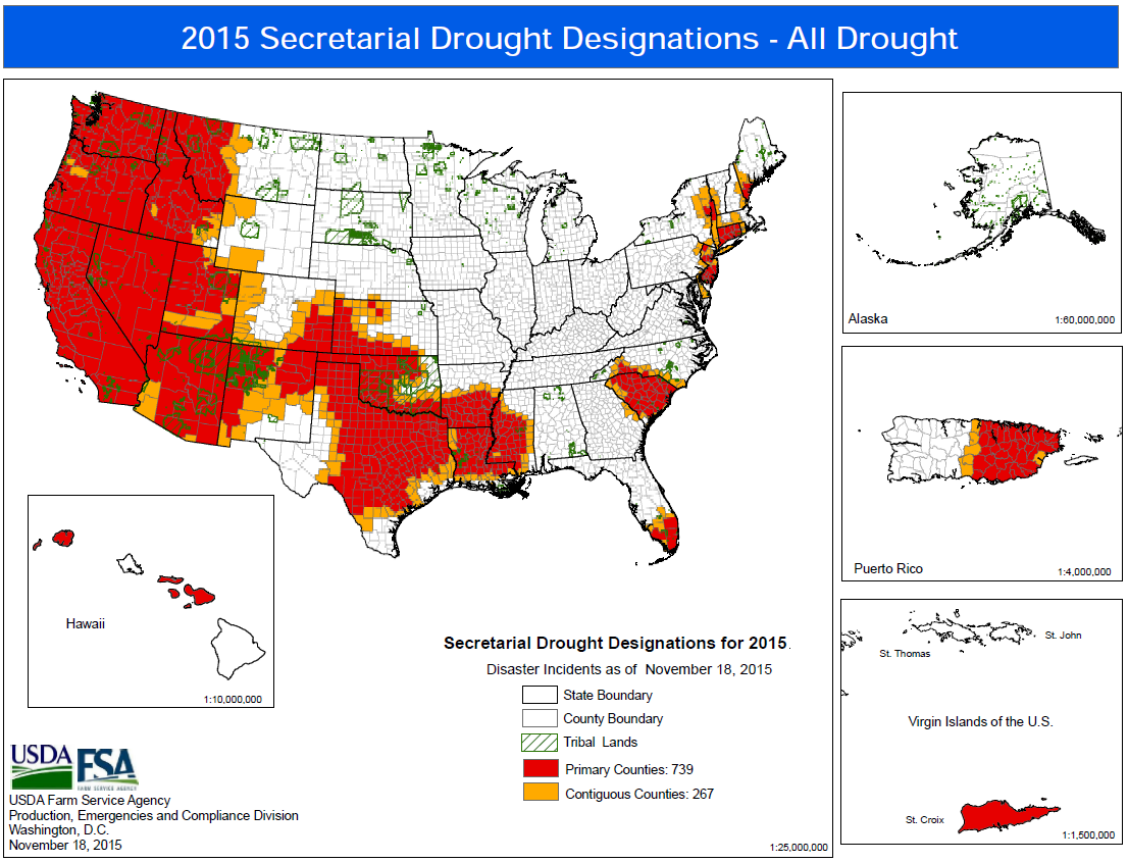
Current National Drought Summary, November 17, 2015

Author: Richard Heim, NOAA/NCEI

"Three strong low pressure systems in the upper atmosphere moved across the Lower 48 States (CONUS) this U.S. Drought Monitor (USDM) week. Associated surface lows and fronts generated large areas of precipitation across the Plains to Midwest, Northeast, and parts of the West. Thunderstorms with heavy rains brought additional drought relief to areas from northeast Texas to southeast Minnesota and the Mid-Mississippi Valley. Several days of onshore flow wrung out abundant Pacific moisture along the coasts of Washington and northwestern Oregon, causing contraction of drought west of the Cascades. Only a few drought and abnormally dry areas in the Northeast received enough precipitation to warrant improvement. The precipitation largely missed areas from northwestern Utah to North Dakota. The Southeast was mostly drier than normal, except for southern Florida which saw both improvement and deterioration of drought."

Detailed regional drought narratives for the week are here.

2015 USDA Drought Designations



Drought Designations as of November 18, 2015

USDA Disaster and Drought Information

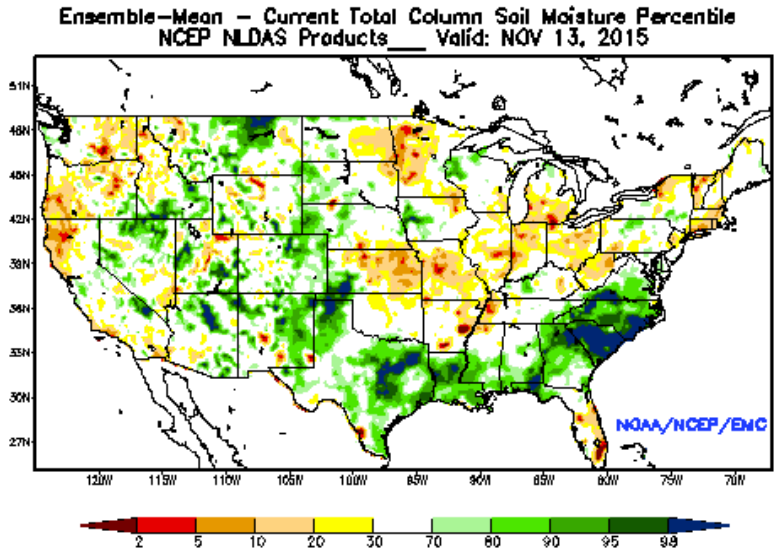
U.S. Population in Drought, Weekly Comparison

Highlighted Drought Resources

- Drought Impact Reporter
- Quarterly Regional Climate Impacts and Outlook
- U.S. Drought Portal Indicators and Monitoring

Other Climatic and Water Supply Indicators

Soil Moisture

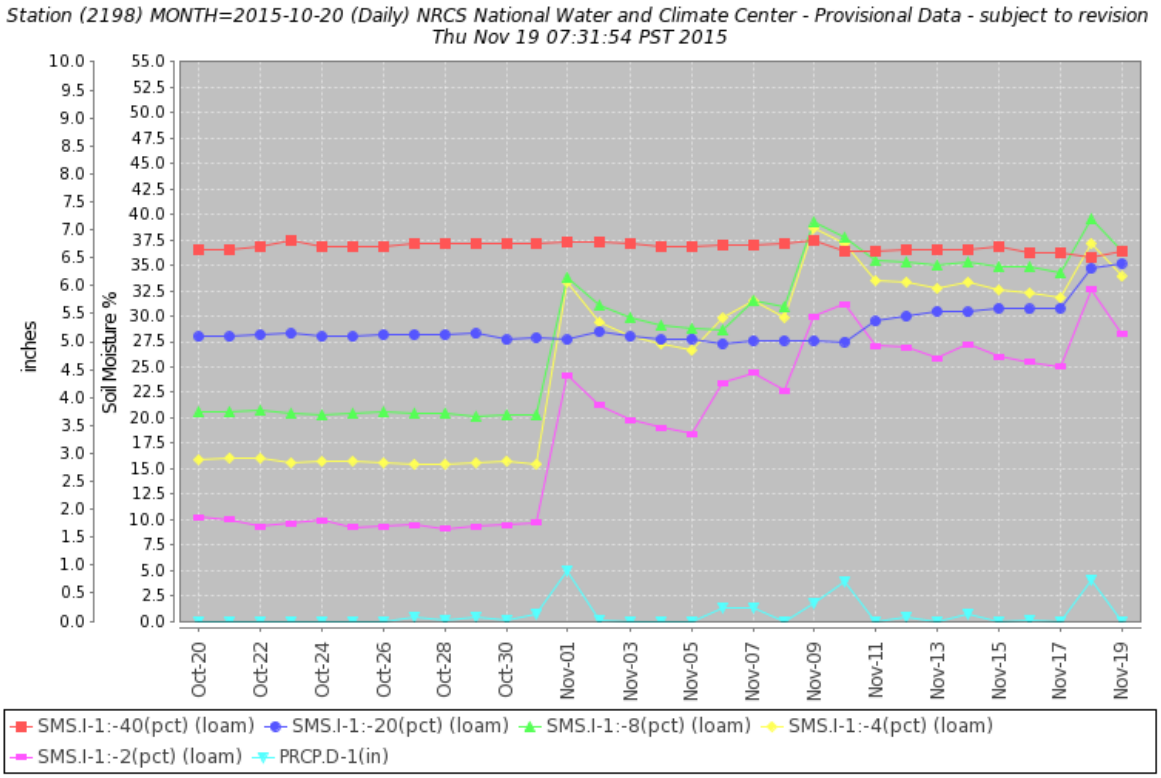


The modeled **soil moisture percentiles** as of November 13, 2015 show scattered areas of dryness in the far West, the Midwest, New England, and Florida.

Above average soil moisture was modeled in much of the interior West, the Gulf Coast, and the Southeast.

University of Washington Experimental Modeled Soil Moisture

Soil Moisture Data: NRCS Soil Climate Analysis Network (SCAN)



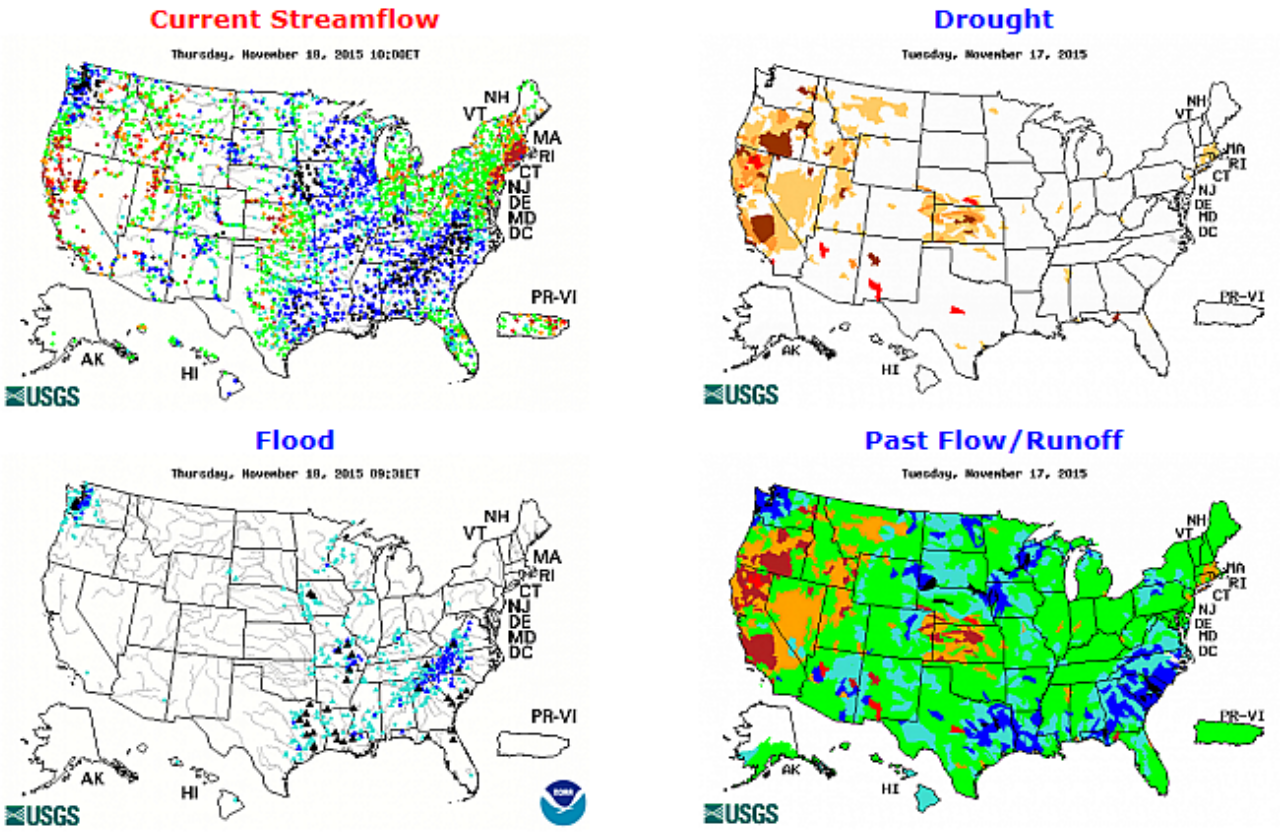
This graph shows soil moisture (at 2-, 4-, 8-, 20-, and 40-inch depths) and precipitation for the last 30 days at the Cook Farm Field D (2198) SCAN site in eastern Washington. Rapid soil moisture response to precipitation events are noticeable at the 2-, 4-, and 8-inch depths, whereas only a delayed response occurred at the 20-inch depth, and there was no response at the 40-inch depth.

Soil Moisture Data Portals

CRN Soil Moisture
Texas A&M University North American Soil Moisture Database

Streamflow

Source: USGS



Streamflow is notably high in the Northwest, the upper Midwest, and the Southeast. Flooding is occurring from Texas into the mid-Atlantic states.

Select any individual map to enlarge and display a legend.

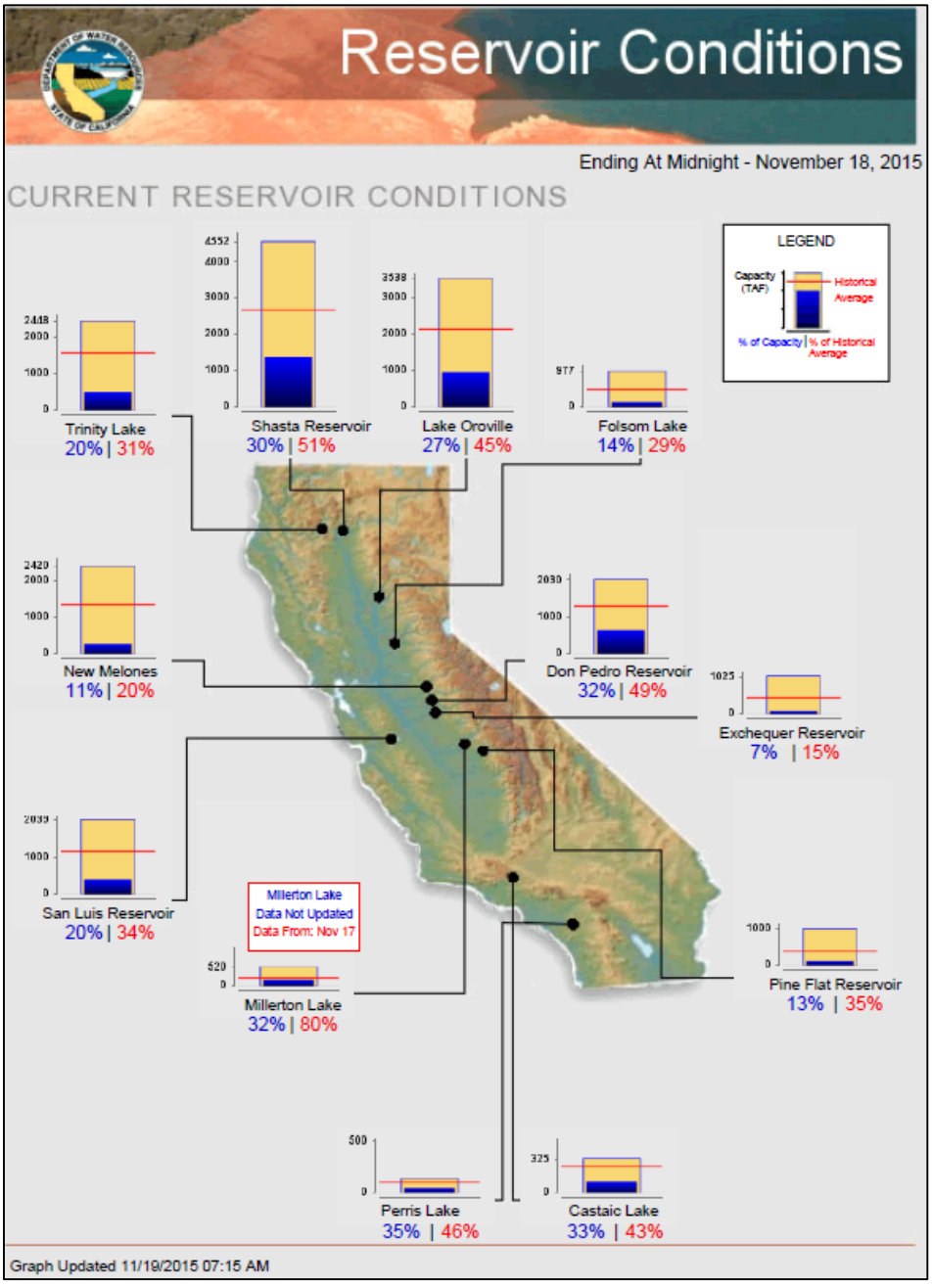
Current Reservoir Storage

National Water and Climate Center Reservoir Data

U.S. Bureau of Reclamation Hydromet Tea Cup Reservoir Depictions:

Upper Colorado
Pacific Northwest/Snake/Columbia
Sevier River Water, Utah
Upper Missouri, Kansas, Oklahoma, Texas

California Reservoir Conditions



Short- and Long-Range Outlooks

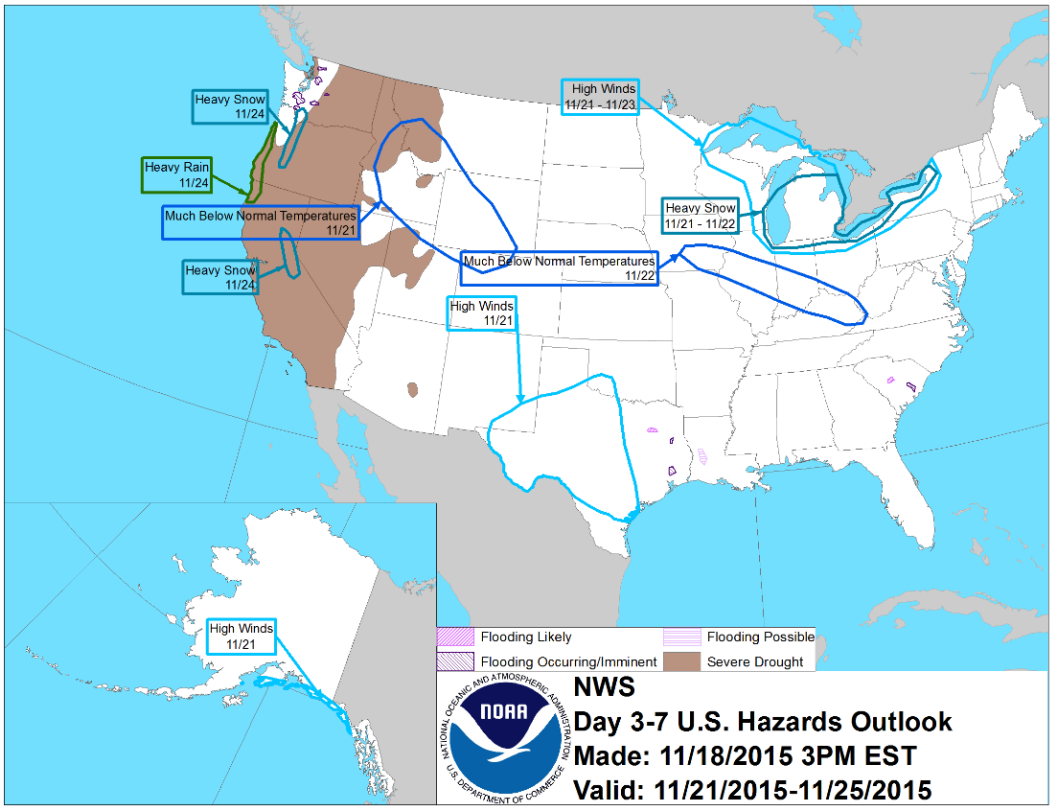
Agricultural Weather Highlights

Author: Brad Rippey, Agricultural Meteorologist, USDA/OCE/WAOB, Washington, D.C.

National Outlook, November 19, 2015: "Lingering effects of a departing storm system will gradually subside across the Midwest and East. Meanwhile, a fast-moving storm will cross the northern U.S., resulting in late-week precipitation from the Pacific Northwest to the Great Lakes region. Significant snow could develop on Friday in the western Corn Belt and spread into portions of the Great Lakes States by Saturday. The axis of heaviest snow, locally 4 inches or more, can be expected roughly from Iowa to Michigan. A brief surge of cold air will trail the Midwestern storm. Other areas of the U.S. can expect a brief period of tranquil weather, except for lingering rain in Florida. By early next week, however, wet weather will return to the Northwest. The NWS 6- to 10-day outlook for November 24 – 28 calls for colder-than-normal conditions from the Pacific Coast to the northern Plains, while near- to above-normal temperatures can be expected across the South, East, and Midwest. Meanwhile, below-normal precipitation in the Pacific Northwest and the Atlantic Coast States will contrast with wetter-than-normal weather across the remainder of the U.S., including all areas from central and southern California to the Plains, Midwest, and mid-South..."

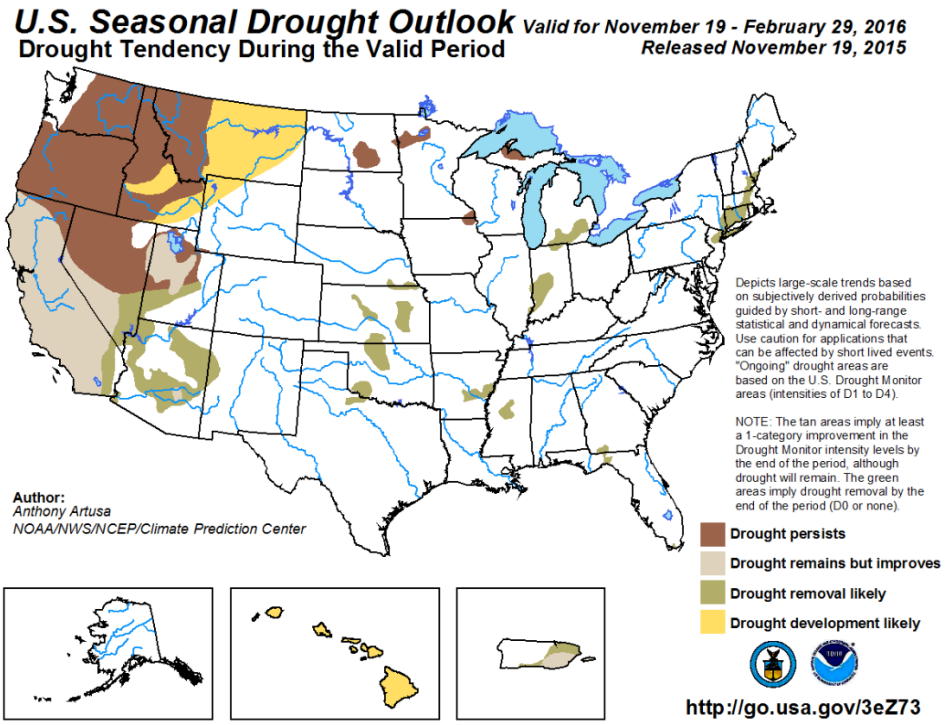
National Weather Hazards

The outlook for **weather hazards** over the next week includes some areas of heavy rain and snow along the West Coast and in the upper Midwest; high winds in the upper Midwest, Texas, and Alaska; and cold temperatures in Idaho, Montana, Illinois, and Indiana.



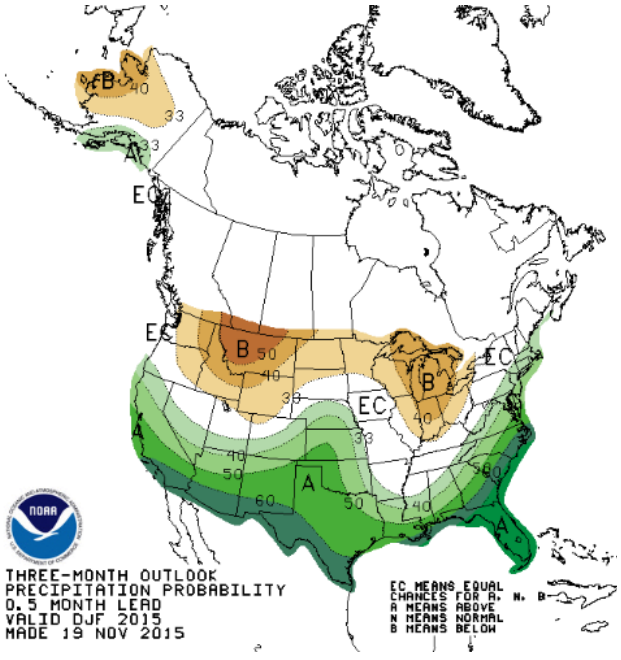
Seasonal Drought Outlook

During the next three months, **drought** will persist in the Northwest and may develop in eastern Montana and Hawaii. Elsewhere, most drought designations are expected to improve.

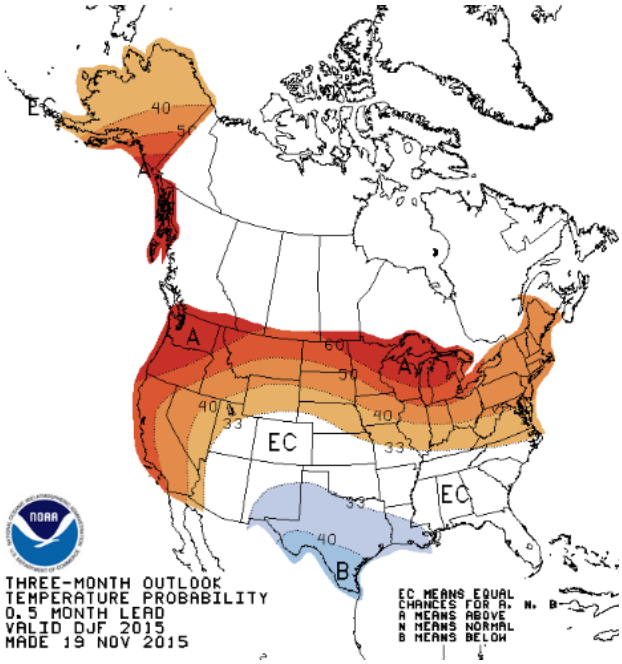


NWS Climate Prediction Center 3-Month Outlook

Precipitation



Temperature



Outlook Summary

NWS Climate Prediction Center:

"The December-January-February (DJF) 2015-2016 precipitation outlook through the early spring continues to favor a pattern that is typically associated with El Niño. Enhanced odds for above-median precipitation are forecast across California, the Southeast, central/southern Plans, Gulf Coast states, and parts of the east coast. Higher probabilities (above 50 percent) are shifted north across California from the previous outlook due to the strength of the ongoing El Niño. The highest probabilities (above 70 percent) for above-median precipitation are forecast across the Florida peninsula and DJF 2015-16 through JFM 2016 which typically has the strongest wet signal during El Niño. Below-median precipitation is favored through the early spring across the northern Rockies, parts of the northern Great Plains, Great Lakes, and the Ohio Valley. The dry signal across the Ohio Valley typically peaks during the JFM 2016 season during El Niño."

"The December-January-February (DJF) 2015-2016 temperature outlook. The largest change in the temperature outlook from the previous one released on October 15 is the expectation that below-normal temperatures are slightly less likely for the Southeast from DJF 2015-16 through MAM 2016. Although statistical models such as the CA, CCA, and SMLR continue to favor below-normal temperatures across the Southeast, especially during JFM 2016, the latest dynamical models have a notable warming trend since last month across the Southeast. The NMME temperature forecast is a good compromise and the official outlook for DJF 2015-16 and JFM 2016 is generally similar to its guidance across the southern tier of the continental U.S. Due to the strength of the current El Niño, above-normal temperatures are no longer favored for the Aleutians during DJF 2015-16 and JFM 2016. All temperature tools continue to strongly favor above-normal temperatures across the northern half of the continental U.S. through the early spring which is consistent with a strong El Niño. Also, above-normal SSTS along the west coast contribute to the enhanced odds for above-normal temperatures during DJF 2015-16. Below-normal temperatures favored for the southern high plains during the 2016 spring are partly related to the expectation of abnormally moist topsoil at that lead time."

More Information

The NRCS **National Water and Climate Center** publishes this weekly report. We welcome your feedback. If you have questions or comments, please **contact us**.